SECTION 3 – ILLICIT DISHCARGE DETECTION AND ELIMINATION

This minimum control measure is critical to the success of the stormwater management program as it will identify and reduce untreated discharges that contribute high levels of pollutants, including heavy metals, toxic materials, oil and grease, solvents, nutrients, viruses and bacteria to receiving waterbodies. Pollutant levels from these illicit discharges have been shown to be high enough to significantly degrade receiving water quality and threaten aquatic, wildlife, and human health.

3.1 REQUIREMENTS

Department Wide

3.1.1 Implementation of an ordinance or other regulatory mechanism (Department policy, guidelines or procedures) to effectively prohibit non-stormwater discharges.

3.1.2 Inform public employees, businesses and the general public of hazards associated with illegal discharges and improper disposal of waste.

3.1.3 As proposed by the end of the fifth year of the General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems, expand the map detailed below in Section 3.1.4. to "identify on such map all outfalls of 15" or greater where such outfalls are located anywhere on Department property". Due to limited funding a percentage of outfall data was collected. The 15" minimum outfall requirement allows for collection of a manageable amount of outfalls, if 12" outfalls were collected a much larger data set would need to be collected and would add higher additional costs that would complicate the collection efforts further.

Urbanized Areas

The following outfall mapping described below in the 2004 SWMP was unattainable. Limitations due to time, budget, and man power greatly diminished the opportunity for this implementation. A notice to the Department of Energy and Environmental Protection was provided in 2009 informing them that CTDOT would not be performing this task. As funding becomes available and opportunity arises CTDOT will continue the implementation of this mapping. Pending the adaptation of the Stormwater Management Plan the Department will attempt to map outfalls as outlined below.

3.1.4 By the end of the second year of the general permit, develop a map or series of maps at a minimum scale of 1"=2000' and maximum scale of 1"=100' showing all stormwater discharges from a pipe or conduit with a diameter of 15" or greater (or equivalent cross-sectional area) owned or operated by the Department. For each discharge the following information shall be included:

a. Type, material, and size of conveyance, outfall or channelized flow (e.g. 24" concrete pipe).

b. The name and Surface Water Quality Classification of the immediate surface waterbody (if available) or wetland to which the stormwater runoff discharges within 500'.

c. If the outfall does not discharge directly to a named waterbody, the name of the nearest named waterbody to which the outfall eventually discharges.

d. The name of the watershed in which the discharge is located.

3.1.5 By the end of the fourth year of the general permit, extend the map detailed in Section 3.1.4. to identify on the map all outfalls 15" or greater that are located within an urbanized area.

3.1.6 Develop, implement and enforce a program to detect and eliminate existing illicit discharges, as defined in 40CFR 122.26(b)(2).

3.1.7 Develop and implement a plan to detect and address future non-stormwater discharges, including illegal dumping.

Appropriate BMP's and measurable goals for this minimum control measure must be determined. This must include the persons(s) or position(s) responsible and implementation dates for each BMP.

3.2 BEST MANAGEMENT PRACTICES

The following BMP's will be utilized in the implementation of the program to address the minimum control measure for Illicit Discharge Detection and Elimination.

3.2.1 Department Policy Regarding Non-Stormwater Discharges

The Department does not allow non-stormwater discharges into storm sewer systems owned and maintained by the Department. Department policy and guidelines requires action by the Attorney General for discharges of this type that are discovered. Upon identifying a non-stormwater discharge, the source of the discharge shall be determined and if found to be beyond or outside the Department's system, the MS4 will be notified along with the Attorney General. If the non-stormwater discharge is from a Department facility, the source location shall be confirmed and corrective actions taken to eliminate the non-stormwater discharge. The Department will continue to prohibit these discharges and will use all available resources for its enforcement.

Training will be provided to Department personnel regarding the hazards associated with illegal discharges and improper disposal of wastes.

3.2.2 Storm Sewer System Map(s)

CTDOT was able to conduct storm sewer mapping for approximately 30% of District 2. District 2 was used as the pilot to determine the requirements and resources that would be needed to accomplish this mapping. Every effort was made to try and figure out what methodology would ensure the greatest results. Due to the time requirements and the overall effort required to implement the mapping, the statewide mapping was not finished during the original outlined time period. CTDOT will continue mapping as outlined below in the 2004 SWMP should funding and resources become available.

A storm sewer system map(s) will be developed, showing the location of all outfalls greater than or equal to 15" in diameter and the names and locations of all waters of the United States that receive discharges from those outfalls. The map will include, but not be limited to, all state owned facilities (including buildings, highways, roadways, railways and commuter lots) within urbanized areas and all limited access expressways within the state. The map(s) scale will be a minimum of 1"=2000' and a maximum of 1"=100' and will include the following information at a minimum:

- Type, material and size of conveyance
- Type of discharge (i.e. outfall or channelized)
- Name and Surface Water Quality Classification of immediate surface waterbody or wetland discharged into, or name of nearest named waterbody downstream
- Name of drainage basin discharge is located in, as per June 1982 Atlas of the Public Water Supply Source and Drainage Basins of Connecticut

The map(s) will be developed using three main components, base mapping, existing data records and field surveys. The Department will obtain the most up to date aerial photogrammetry, to establish a base map on which the storm sewer information will be overlaid. All existing information for drainage systems and outfall locations will be collected from state, regional and local government including, but not be limited to:

- Digital and Non-Digital existing surveys
- As-Built plans
- Construction plans
- ROW maps
- Major Traffic Generators
- Town mapping
- MDC mapping
- Video Log

Field surveys will be performed by the Districts and Central Surveys, using GPS (mapping grade), to verify existing structure locations and locate missing structures. Due to the size of the Department's storm drainage facilities and the extent of the mapping needed, the map will be completed within approximately eight years. It will take an

extended period of time to complete this statewide map covering the urbanized areas. The mapping will be completed one district at a time (4 phases), starting with District 2 (Approximately 30% mapped). The remaining districts will be completed as follows: District 4, then District 1 and finishing with District 3. This phased approach will allow for any unforeseen problems to be worked out in the initial district to be mapped.

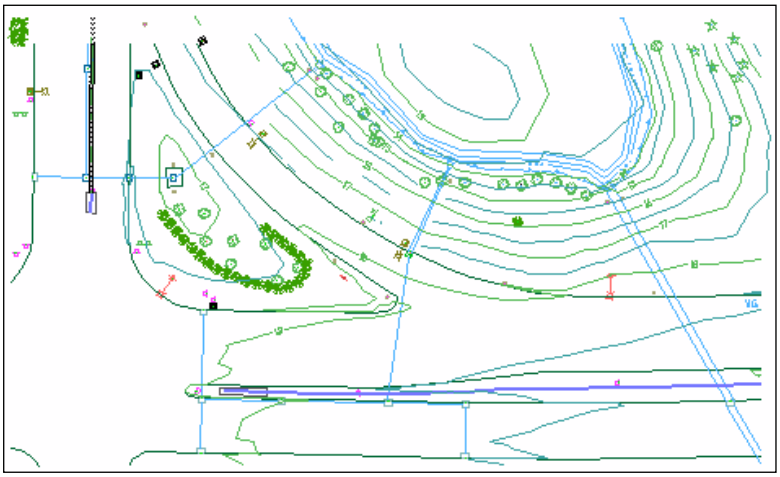
The Department will establish a system (database) to manage all of the information associated with the map(s). The database will utilize a Geographical Information System (GIS) to build and query the information, which will be accessible to all offices of the Department. The database will include but not limited to the following information associated with outfalls:

- ID number
- Town
- Size
- Shape
- Elevation
- Flow
- Direction
- Associated structures
- Associated waterbodies receiving stormwater discharges

The storm sewer map is a component of the program that will require continuous maintenance after its initial development. The Department will allocate the necessary personnel and materials needed to keep the map up to date with the latest storm sewer system configurations and information.

The benefits associated with this BMP include providing awareness of the intake and discharge areas of the Department's systems. This information will be helpful in determining the extent of dry weather flows, potential sources and the particular waterbodies that these flows may be affecting. The map will also be useful in identifying the responsible parties associated with specific illicit discharges.

Example of Storm Sewer System Mapping. 1"=40' topographic mapping showing contours, storm sewer system and outfalls.



The measurable goals, target dates and responsible position associated with this BMP as were outlined in the 2004 SWMP are detailed in the following table. Note that these are only estimations and once the mapping is initiated a better understand of staffing requirements can take place. With submittal of the Departments annual report updates on the status of goals can be provide to CTDEEP.

Table 3.1 Storm Sewer System Map BMP Measurable Goals and Implementation Dates

Target Date	Activity	Position Responsible
Year 1	Acquire initial 25% of base mapping (Aerial Photography.) Perform initial 10% of Field Data Collection Purchase workstation and software	Bureau Chief Thomas Maziarz
Year 2	Acquire 25% of base mapping (Aerial Photography.) Perform 22% of Field Data Collection Modify and maintain database (GIS)	Bureau Chief Thomas Maziarz
Year 3	Acquire 25% of base mapping (Aerial Photography.) Perform 22% of Field Data Collection Modify and maintain database (GIS)	Bureau Chief Thomas Maziarz
Year 4	Acquire final 25% of base mapping (Aerial Photography.) Perform 23% of Field Data Collection Modify and maintain database (GIS)	Bureau Chief Thomas Maziarz
Year 5	Perform final 23% of Field Data Collection Modify and maintain database (GIS)	Bureau Chief Thomas Maziarz
Year 6	Continue compiling GIS information / preparing map(s)	Bureau Chief Thomas Maziarz
Year 7	Continue compiling GIS information / preparing map(s)	Bureau Chief Thomas Maziarz
Year 8	Complete initial layout of storm sewer system map	Bureau Chief Thomas Maziarz

3.2.3 Illicit Discharge Detection and Elimination Program

A program has been developed and implemented to detect, locate and eliminate illicit discharges (to the maximum extent practicable) into the Department's storm sewer systems. The plan will utilize sampling/monitoring techniques, personnel and equipment, along with the storm sewer map (section 3.2.2) for locating sources of illicit discharge.

All sampling parameters were collected at Illicit Discharge points up to 2008 (year 4). A consultant was hired by CTDOT to perform outfall sampling. Results were collected and compiled by the Department. However, due to funding constraints sampling was not continued. It would be the aim of the Department to continue outfall sampling as collected previously and outlined below.

Stormwater sampling shall be collected from discharges resulting from a storm event that is greater than 0.1 inch in magnitude and that occurs at least 48 hours after any previous storm event of 0.1 inch or greater. Runoff events resulting from snow or ice melt cannot be used to meet the minimum annual monitoring requirements. Grab samples shall be used for all monitoring. Grab samples shall be collected during the first (6) hours of a storm event discharge.

The following information shall be collected for the storm events monitored:

- Date
- Air Temperature
- Time of the start of the discharge
- Time of sampling
- Magnitude (in inches) of the storm event sampled
- Duration between the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event

Unless otherwise specified, all pollutant parameters shall be tested according to methods prescribed in Title 40, CFR, Part 136 (1990). Testing of these parameters shall be performed at certified state laboratories. The parameters to be tested at each discharge point shall include:

- pH(SU)
- Hardness (mg/l)
- Conductivity (umos)
- Oil and grease (mg/l)
- Chemical Oxygen Demand (mg/l)
- Turbidity (ntu)
- Total Suspended Solids (mg/l)
- Total Phosphorous (mg/l)
- Ammonia (mg/l)
- Total Kjeldahl Nitrogen (mg/l)
- Nitrate plus Nitrite Nitrogen (mg/l)
- E. coli (col/100ml)
- In addition to this list of parameters, uncontaminated rainfall pH shall be measured at the time the runoff sample is taken.

The Department will sample/monitor sixteen (16) different outfalls annually. Each of the four (4) districts will test four (4) outfalls per year. The districts are defined in maps contained in Appendix G. Outfalls will be selected for monitoring based upon road type and average daily traffic (ADT) grouping associated with a particular outfalls drainage area. Sampling will be performed for each of the following four (4) ADT groups per district:

- 0 to 25,000
- 25,000 to 50,000
- 50,000 to 75,000
- over 75,000

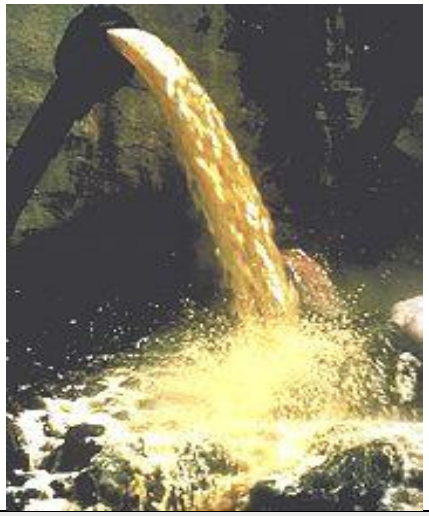
A state-wide map showing the "Average Daily Traffic Zones" for the above groupings of ADT can be found in Appendix L. Grouping ADT is practical because levels of pollution in stormwater runoff typically increase with increased volumes of traffic. The sampling based upon ADT classification will allow for different types of roadways and levels of traffic to be accounted for. Sampling should only occur when traffic loads dictate and access is safe on Interstate State highways. Sampling should be focused on State Routes and US Routes if possible within districts to avoid the dangers of sampling along the interstates.

Facilities with lease operations (service plazas, rest areas, commuter parking lots, etc.) would be eligible for testing if they fall within one of the ADT groups scheduled for testing.

Typical storm sewer system outfalls.

For multi-facility locations and locations where state owned property is leased and/or operated by public or private entities (abutting MS4), the Department and the MS4 would be co-permitees. The Department would be responsible for its system up to the tie in or connection point, while the MS4 would be responsible from the connection point upstream. If an illicit discharge is identified within a state-owned system, the Department will be responsible for determining whether the sources origin is located within its system. If the illicit discharge is determined to be from a point beyond the Department's system, the MS4 will be notified as well as a copy of the notification also being sent to the Attorney General.

The Department's facilities that are currently covered under the General Permit for the Discharge of Stormwater Associated with Industrial Activity will remain under that permit, and therefore will not be subject to the requirements of this permit or covered under this stormwater management program. These facilities will be covered and operated under their respective Stormwater Pollution Prevention Plans. The following list contains the types of facilities and transportation structures covered under the general permit for the Discharge of Stormwater from Small Municipal Storm Sewer Systems.



Photograph of a typical illicit stormwater discharge.

Facilities

- Rest Area
- Rest Area & Service Plaza "Gas"
- Rest Area & Service Plaza "Gas & Restaurant"
- Commuter Parking Lots (within UA's and along Interstates)

Roadways

- Interstate Routes
- U.S. Routes (within UA's)
- State Routes (within UA's)

Railways

- Active rail lines owned and maintained by CTDOT or Metro North

Lists describing the individual facilities, roadways and railways are located within the appendices of the document.

Documentation within the annual reports will include information such as: the number of outfalls tested, complaints received and addressed, and the number of illicit discharges and quantities of flow eliminated. Refer to Section 7 "Additional Requirements" for specific details regarding annual reports to CTDEEP.

The benefits associated with these BMP's include the identification and elimination of point sources of pollutant discharges. This allows for the Department to establish a working database of information that will be useful in locating problematic areas.

3.2.4 Future Illicit Discharge Detection and Elimination

The Department will continue to monitor its stormwater discharges (as funding allows) in an effort to detect and address future non-stormwater discharges. This will allow for a collaborative effort between the Department and municipalities / other state agencies to identify areas of illegal dumping.